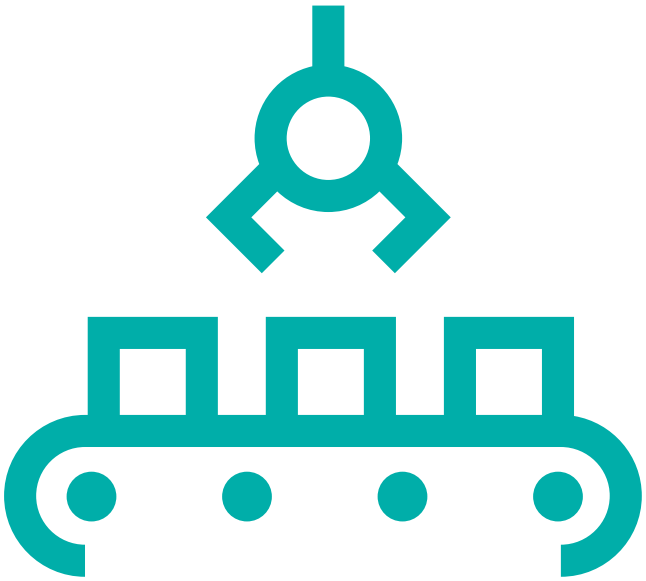
NOCTI

Teacher Credential Blueprint



Welding

Code: 5479 / Version: 01

General Assessment Information

Blueprint Contents

Test Type: The Welding assessment is included in NOCTI's Teacher assessment battery. Teacher assessments measure an individual's technical knowledge and skills in a proctored proficiency examination format. These assessments are used in a large number of states as part of the teacher licensing and/or certification process, assessing competency in all aspects of a particular industry. NOCTI Teacher tests typically offer both a written and performance component that must be administered at a NOCTI-approved Area Test Center. Teacher assessments can be delivered in an online or paper/pencil format.

Revision Team: The assessment content is based on input from secondary, post-secondary, and business/industry representatives from the states of Michigan, New York, Pennsylvania.

CIP Code

48.0508-
Welding Technology/Welder

Learning that works for America CTE™

Career Cluster -
Manufacturing

O*NET™ in*it

51-4121.06- Welders, Cutters, and Welder Fitters

Association for Career and Technical Education ACTE®

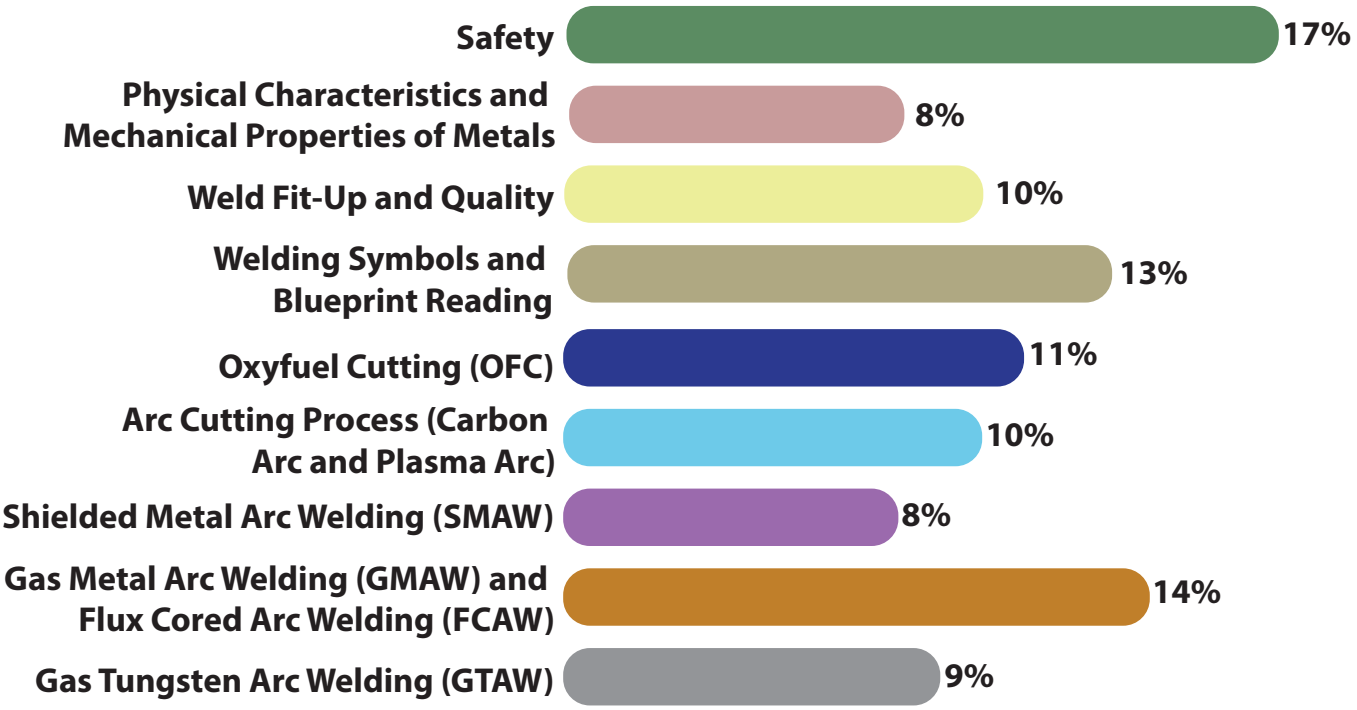
The Association for Career and Technical Education (ACTE), the leading professional organization for career and technical educators, commends all students who participate in career and technical education programs and choose to validate their educational attainment through rigorous technical assessments. In taking this assessment you demonstrate to your school, your parents and guardians, your future employers and yourself that you understand the concepts and knowledge needed to succeed in the workplace. Good Luck!

Written Assessment

NOCTI written assessments consist of questions to measure an individual's factual theoretical knowledge.

Administration Time: 3 hours
Number of Questions: 172
Number of Sessions: This assessment may be administered in one, two, or three sessions.

Areas Covered



Specific Standards and Competencies Included in this Assessment

Safety
- Identify various welding hazards and safety practices
- Display familiarity with industrial and OSHA safety standards
- Demonstrate knowledge of oxyfuel safety procedures
- Demonstrate knowledge of arc welding and cutting safety procedures
- Demonstrate proper and safe use of PPE, hand tools, and power equipment
- Identify proper housekeeping techniques

Physical Characteristics and Mechanical Properties of Metals
- Identify metals by physical characteristics
- Explain the pre-heating and post-heating processes
- Exhibit understanding of distortion control methods
- Identify basic mechanical properties of metals

Weld Fit-Up and Quality
- Clean and prepare materials for groove and fillet welds
- Identify welding defects and/or discontinuities
- Test welds using various techniques
- Use standard measuring and layout tools
- Describe welding industry codes, standards, and procedures

Welding Symbols and Blueprint Reading
- Interpret weld and welding symbols
- Read and interpret blueprints and sketches
- Identify various joint designs (joint geometry) and welding positions

Oxyfuel Cutting (OFC)
- Identify oxyfuel cutting principles
- Identify and maintain oxyfuel equipment
- Assemble and disassemble oxyfuel equipment
- Handle and store compressed gas cylinders
- Cut and form metal with oxyfuel equipment

(Continued on the following page)

Specific Standards and Competencies (continued)

Arc Cutting Process (Carbon Arc and Plasma Arc)
- Identify arc cutting process principles
- Assemble and disassemble arc cutting equipment
- Identify and maintain arc cutting equipment
- Exhibit an understanding of arc cutting consumables
- Demonstrate appropriate use of arc cutting equipment

Shielded Metal Arc Welding (SMAW)
- Explain principles of SMAW
- Set up and maintain SMAW equipment
- Demonstrate selection and application of SMAW consumables
- Perform fillet and groove welds on plate in all positions

Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW)
- Explain principles of GMAW and FCAW
- Set up and maintain GMAW and FCAW equipment
- Demonstrate selection and application of GMAW and FCAW consumables
- Perform fillet and groove welds on plate in all positions
- Identify different modes of transfer and power sources in GMAW and FCAW

Gas Tungsten Arc Welding (GTAW)
- Explain principles of GTAW
- Set up and maintain GTAW equipment
- Demonstrate selection and application of GTAW consumables
- Perform fillet and groove welds on ferrous and nonferrous metals in all positions

Sample Questions

Which is a ferrous metal?

A. aluminum
B. copper
C. magnesium
D. mild steel

Which number is the smallest?

A. 0.250
B. 0.500
C. 0.005
D. 0.050

When welding a 3-G certification test-weld, the weld must be welded in the _____ position.

A. vertical
B. flat
C. overhead
D. horizontal

The minimum number of orifices in an oxyfuel cutting tip is

A. one
B. two
C. three
D. four

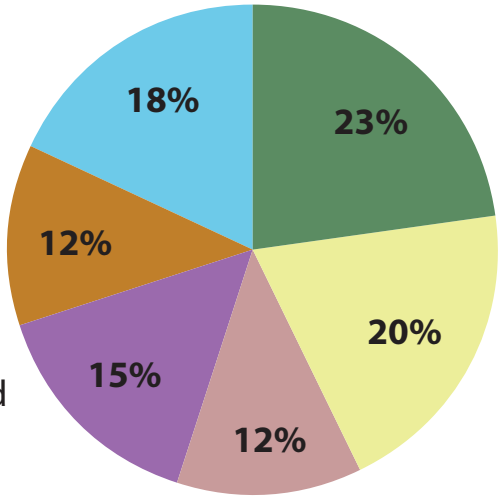
Argon and helium gases are

A. inert
B. reactive
C. neutral
D. oxidizing

Performance Assessment

NOCTI performance assessments allow individuals to demonstrate their acquired skills by completing actual jobs using the tools, materials, machines, and equipment related to the technical area.

Administration Time: 2 hours and 35 minutes
Number of Jobs: 6



Areas Covered:

23% Oxyfuel Cutting
Participant will select and set up equipment correctly and safely, lay out the project according to the provided diagram, and flame cut to specified dimensions.

20% SMAW V-Groove, 3G
Participant will select and set up equipment correctly and safely, tack the steel pieces to the base, and perform three weld passes in a V-groove according to specifications.

12% GMAW, 2F
Participant will select and set up materials correctly and safely, and using tubing, steel, and welding wire, weld material according to specifications.

15% Aluminum GTAW Tee Joint, 2F
Participant will select and set up equipment correctly and safely, and using aluminum and filler rod, weld a Tee-joint in the horizontal position according to specifications.

12% Stainless Steel GTAW Lap Joint, 2F
Participant will set up equipment correctly and safely, and using stainless steel and filler rod, weld a lap joint according to specifications.

18% Uphill FCAW-G, 3F
Participant will set up equipment correctly and safely, and using mild steel and filler material, weld a root pass and a cap pass according to specifications.

Sample Job

Aluminum GTAW Tee Joint, 2F

Maximum Time: 20 minutes

Participant Activity: Participant will select and set up equipment correctly and safely, and using 2 pieces of aluminum and filler rod, weld a Tee-joint in the horizontal position according to specifications.